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## TENEBRIONIDAE OF THE NANSEI ISLANDS VI (COLEOPTERA)\*

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### Abstract

Three new taxa, *Setenis exigua*, *Setenis persimilis* from Yakushima Island and *Phaedis (Phaedis) iriei* from Okinawa-Honto Island, are described. *Phaedis (Phaedis) oshimensis* Nakane is newly recorded from Tokunoshima Island. A new name, *Strongylium araii*, is proposed for *S. costatum* M. T. Chūjō, 1979, nec Ardoin, 1972. Keys to the Ryukyuan species of *Setenis* and *Phaedis s. str.* are provided.

### I. DESCRIPTIONS OF THE NEW SPECIES

#### *Setenis exigua* sp.nov.

Elongated-oval, slightly depressed, indistinct umber to dull black.

Head slightly convex, nearly parallel-sided, densely punctate, surface feebly undulate, inner ocular groove very shallow, not elongated into tempora, pre-ocular area weakly rounded, not expanded outwards, clypeal suture distinct, very narrow, apical margin nearly truncate, roundly bent downwards. Eye weakly, roundly expanded, very finely faceted.

Antenna comparatively short, apical 6 segments compressed, forming very loose club, relative length of each segment (base to apex) 10 : 4 : 9 : 8 : 8 : 8 : 8 : 7 : 7 : 10. Labrum strongly convex, roughly, strongly punctate, semi-circular, apex very feebly sinuate, narrowly marginate. Maxillary palpus moderately securiformed. Mentum with sparse hairs, very strongly, roughly punctate, strongly convex, medianly grooved; gular suture invisible; tempora to gula very strongly, roughly carved.

Pronotum slightly transverse (4:5), gently convex, strongly, densely punctate, wholly marginate except for middle 3/5 of front margin; front margin nearly truncate, front corner not angulate; side margin gently, roundly expanded; hind corner comparatively, acutely angulate, slightly, obliquely expanded; hind margin bisinuate. Scutellum tongue-shaped, apex slightly point-

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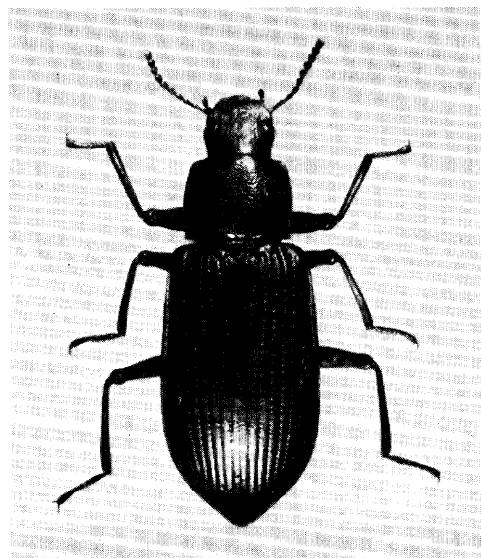


Fig. 1. *Setenis exigua* sp. nov.

ed, sparsely punctate.

Elytra gently convex, widest at 2/3 from base, strongly punctate-striate; interstices strongly convex, faintly aciculate; basal margin biarcuate, shoulder rounded, shoulder to apex narrowly marginate, apex obtuse.

Prosternum evenly, sparsely punctate; prosternal process comparatively wide, nearly parallel-sided, median 1/2 depressed, apex very slightly rounded and reflexed. Propleura very sparsely, strongly punctate, sparsely, irregularly rugose. Mesonotum with very wide, shallow receptor of prosternal process. Metasternum evenly, very sparsely punctate, irregularly, shallowly rugose.

First to 3rd visible abdominal sternites evenly, densely punctate, irregularly, densely rugose, punctures of penultimate and terminal sternites much finer than those on basal three segments. Every femur thick, simple.

Front tibia gently thickened towards apex, apical 1/3 weakly, roundly curved inwards; middle and hind tibiae simple. External sexual differentiation not recognized.

Length : 17.0-17.8 mm. Width : 5.9-6.6 mm.

DISTRIBUTION : Yakushima Island.

TYPE MATERIAL: Holotype ♂ (Type No. 2190, Kyushu Univ.), Fundonosawa (150-400 m), Yakushima, Japan, 6. x. 1968, M. T. Chûjô leg. Paratotype: ♀, same data as holotype.

TYPE DEPOSITORY: Holotype is preserved in the Entomological Laboratory, Faculty of Agriculture, Kyushu University.

This species is nearly allied to *S. iriomotensis* M. T. Chûjô, 1979 from Iriomotejima Island, but may distinctly be separated from the latter through

the following characters :

**S. iriomotensis** M. T. Chûjô

Body comparatively, strongly convex, shining black ; eye strongly prominent outwards ; pronotum with finer punctures, side margin strongly warped outwards ; elytral interstices sparsely, distinctly aciculate ; propleura nearly smooth ; mesepisternum very densely, strongly punctate.

*S. exigua* sp. nov.

Body comparatively depressed, indistinct umber to dull black; eye weakly prominent outwards; pronotum with larger punctures, side margin gently warped outwards ; elytral interstices sparsely, faintly aciculate ; propleura sparsely, strongly punctate, mesepisternum very sparsely, weakly punctate.

***Setenis persimilis* sp. nov.**

*Setenis striatipennis* : M. T. Chûjô, 1975 (nec Lewis, 1894), Esakia, (9) : 19.

Elongate, gently convex, shining black. Head densely, shallowly punctate ; clypeal suture very narrow, distinct, semicircular, front margin strongly bent downwards, very shallowly sinuate; preocular area raised just above antennal joint; interocular area 1.5 times as wide as eye.

Eye transverse, moderately prominent outwards.

Antenna short, rather stout, 7th to terminal segments forming loose club, relative length of each segment (base to apex) 6 : 3 : 7 : 6 : 5 : 5 : 5 : 4 : 4 : 5. Maxillary palpus rather securiformed. Mentum strongly convex at middle part, with dense, long brushy hairs. Gular suture visible, very shal-

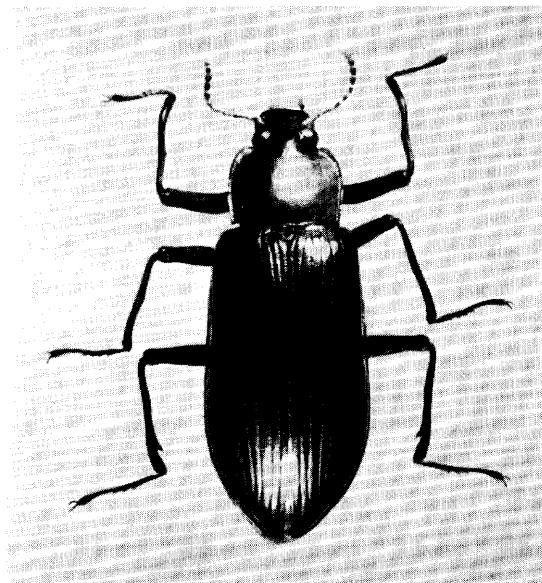


Fig. 2. *Setenis persimilis* sp. nov.

lowly grooved.

Pronotum transverse (3 :4), slightly convex, very sparsely punctate, wholly marginate, margin reflexed; front margin widely sinuate behind neck; front corner roundly expanded forwards, widely depressed; side margin slightly, roundly warped; hind corner acutely angulate; hind margin shallowly bisinuate. Scutellum nearly triangular, feebly undulate, side weakly, roundly warped.

Elytra gently convex, sides nearly parallel-sided, wholly, narrowly marginate, pun&ate-striate, interstices very weakly convex, nearly smooth, basal margin biarcuate, much wider than pronotum, shoulder rounded.

Prosternum roundly convex at inter-coxal area, prosternal process nearly parallel-sided, apex weakly, roundly projected backwards, V-shaped receptor of prosternal process wide, shallow, Metasternum shallowly, sparsely rugose, very sparsely punctate. Visible abdominal sternites comparatively densely punctate, 1st to 3rd segments sparsely rugose, both sides narrowly marginate, penultimate segment faintly marginate at both sides, terminal segment narrowly, very distinctly marginate.

Every femur simple, slightly depressed. Every tarsus simple. In ♂ front tibia biangulate, very slightly warped outwards at basal 2/3 and then strongly bent in- and downwards at apical 1/3, inside angulate at 2/5 from base; middle tibia very slightly biangulate, inside very slightly expanded at 2/5 from base; apical part very feebly bent inwards; hind tibia very feebly biangulate, apical 1/3 strongly clubbed and weakly bent inwards, inside of subapical part obliquely, deeply scooped.

In ♀ every tibia very slightly thickened towards apex, apical 1/3 weakly bent inwards.

Length : 19.8-23.8 mm. Width : 7.0-8.5 mm.

DISTRIBUTION: Yakushima Island.

TYPE MATERIAL : Holotype ♂ (Type No. 2191, Kyushu Univ.), Mt. Miyanoura, Yakushima, Nansei Is., Japan, 11. ix. 1973, Coll. H. Irie. Paratotypes: 3♀♀, same data as holotype. Paratypes : 2♀♀, Mt. Miyanoura, Yakushima, Nansei Is., Japan, 19. vii. 1974, Coll. H. Irie ; ♀, Mt. Takatsuka, Yakushima, Nansei Is., Japan, 20. vii. 1974, Coll. H. Irie; ♂, Mt. Tachūdake, Yakushima, Nansei Is., Japan, 20. vii. 1974, Coll. H. Irie ; ♀, Miyanoura, Yakushima, 21. vii. 1974, T. Mikage leg.

TYPE DEPOSITORY: Holotype is preserved in the Entomological Laboratory, Faculty of Agriculture, Kyushu University.

This species is closely related to *S. subbiangulata* M. T. Chūjō, 1978 from Okinawa-Honto Island, but is easily separated from the latter through the following characters :

<i>S. subbiangulata</i> M. T. Chūjō	<i>S. persimilis</i> sp. nov.
Body generally larger, pronotum roundly convex, elytral punctate-striæ	Body generally smaller, pronotum very weakly convex, elytral punctate-

deep; apical 1/3 of male front tibia strongly bent in- and downward, inside of middle femur with dense pubescence, scooped part of hind tibia with brushy hairs.

striae shallow; apical 1/3 of male front tibia strongly bent in- and downward, inside of middle femur without pubescence, scooped part of hind tibia naked.

***Phaedis (Phaedis) iriei* sp. nov.**

Oblong-oval, convex, shining black; elytra with metallic green tinge, with reddish purple tinge along median line; labrum, antennae, maxillary palpus and labial palpus reddish brown.

Head shallowly, densely punctate, punctures being sparser towards neck, front margin of clypeus shallowly sinuate, clypeal suture visible, preocular area weakly convex, side margin weakly convex. Eye large, rather transverse.

Antenna rather slender, apical 5 segments depressed, forming loose club; relative length of each segment (base to apex) 10 : 5 : 11 : 8 : 8 : 8 : 8 : 8 : 10. Maxillary palpus strongly securiformed, apical part yellowish brown. Mentum tongue-shaped, deeply grooved sublaterally, gular suture deep, tempora to gula very roughly, strongly carved.

Pronotum rather transverse, slightly convex, very narrowly marginate except for middle 3/5 of front margin, very sparsely, irregularly punctate; front margin very shallowly, wholly sinuate, front corner rounded; side margin gently rounded, very feebly sinuate at subbasal part; hind corner slightly angulate, hind margin bisinuate to receive arcuate basal margin of each elytron. Scutellum nearly smooth, triangular, both sides very weakly rounded.

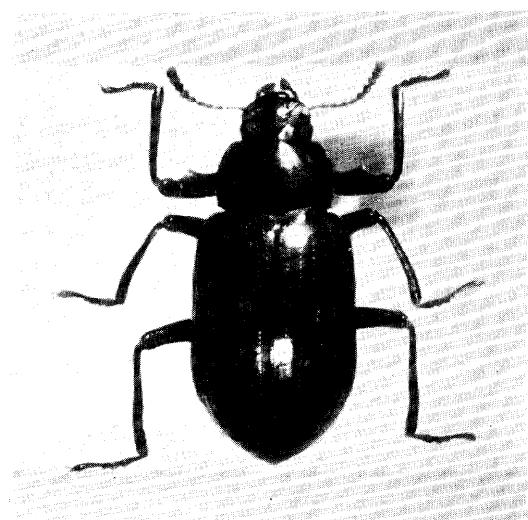


Fig. 3. *Phaedis (Phaedis) iriei* sp. nov.

Elytra moderately convex, punctate-striate, wholly, narrowly marginate ; basal corner rounded, sides gradually dilated towards apex, widest at 3/5 from base and then narrowed towards apex, apex obtuse; interstices not convex, very sparsely aciculate, penultimate to terminal interstices shallowly scooped at 1/3 from base.

Prosternum weakly rugose, prosternal process comparatively narrow, weakly widened and convex at inter-coxal area and then gradually narrowed towards apex, apex obtuse, median 1/3 longitudinally depressed, depression not reaching to apex. Mesosternal V-shaped cavity wide, being wider and deeper towards base, edge of cavity ridged. Metasternum with very shallow median groove.

First to 3rd visible abdominal sternites sparsely, strongly punctate, irregularly, very sparsely and longitudinally wrinkled, penultimate and terminal sternites sparsely aciculate.

Front femur with large, thin and exteriorly warped dental process at 3/4 from base. Front tibia gently thickened towards apex, feebly warped inwards, wholly, densely carved, inside wholly, narrowly ridged, inside of apical 1/3 with dense, short golden hairs.

In ♂ inside of middle to subapical part of middle tibia very shallowly scooped on dorsal surface sublaterally, scooped part to apex with dense, short golden hairs ; inside of subapical part of hind tibia distinctly scooped on dorsal surface sublaterally, scooped part to apex with dense, short golden hairs. Front tarsus rather stout, relative length of each segment (base to apex) 10 : 6 : 6 : 6 : 25, penultimate segment much slenderer than 3rd. Hind tarsus with relative length-of each segment (base to apex) 20 : 8 : 8 : 27.

In ♀ middle and hind tibiae simple, apical half of inside with sparse, short golden hairs, hairs becoming denser towards apex.

Length : 10.5-12.0 mm. Width : 4.8-6.8 mm.

**DISTRIBUTION:** Okinawa-Honto Island.

**TYPE MATERIAL:** Holotype ♂ (Type No. 2192, Kyushu Univ.), Oku, Okinawa, Nansei Is., Japan, 18. iv. 1974, Coll. H. Irie. Paratypes: ♀, Yona, Okinawa, Ryukyu, 12-17, vi. 1970, H. Makihara leg. ; ♀, Mt. Yonahadake, Okinawa, Nansei Is., Japan, 28. vi. 1972, Coll. H. Irie ; ♀, Mt. Yonaha, Okinawa, Nansei Is., Japan, 22. iv. 1973, Coll. H. Irie ; ♂ & ♀, Kunigami-son, Okinawa I., Nansei Is., Japan, 4. iv. 1975, Coll. H. Irie; ♂ & ♀, Oku, Okinawa, Nansei Is., Japan, 30. vi. 1976, H. Makihara leg.

**TYPE DEPOSITORY:** Holotype is preserved in the Entomological Laboratory, Faculty of Agriculture, Kyushu University.

This species is very close to *P.(P.) oshimensis* Nakane, 1979 from Amami-Oshima I., but is easily separated from the latter through the following characters:

*P. (P.) oshimensis* Nakane

Body generally smaller, elytra with purple tinge dominant, side margin of pronotum comparatively, strongly scooped at subbasal part, striate-punctures on elytra larger, femoral process smaller, scooped part of hind tibia

*P. (P.) iriei* sp. nov.

Body generally larger, elytra with metallic green tinge dominant, side margin of pronotum very feebly scooped at subbasal part, striate-punctures on elytra finer, femoral process larger, scooped part of hind tibia shallow-deeper.

II. A NEW RECORD OF *Phaedis (Phaedis) oshimensis* NAKANE

*Phaedis (Phaedis) oshimensis* Nakane has been only known from Amami-Oshima Island. A new record of this species is added here as follows:

Specimens examined: 3 exs., Inokawa, Tokunoshima, Ryukyu, 28-31. v. 1970, H. Makihara leg.

## III. REPLACEMENT OF REJECTED HOMONYM

*Strongylium araii* M. T. Chûjô nom. nov.

*Strongylium costatum* M. T. Chûjô, 1979, *Esakia*, (14) : 54-55 (preocc. Ardoïn, 1972).

IV. KEY TO THE RYUKYUAN SPECIES OF *Setenis* BASED ON MALE

1 : Front tibia more or less expanded interiorly at basal half, hind tibia obliquely, deeply scooped on interior subbasally ..... 2

1' : Front tibia not expanded interiorly at basal half, hind tibia not scooped on interior subbasally ..... 3

2 : Pronotum strongly convex, relative length of pronotum and elytra 3:8, elytra strongly convex, front tibia expanded interiorly at basal half. Body length: 18.5-24.0 mm. (Okinawa-Honto I.) .....\* *subbiangulata* M. T. Chûjô, 1978

2' : Pronotum slightly convex, relative length of pronotum and elytra 1:4, elytra gently convex, front tibia angulate interiorly at 2/5 from base. Body length: 19.8-23.8 mm. (Yakushima I.) ..... *persimilis* sp. nov.

3 : Basal half of front tibia simple, apical 1/2 or 1/3 strongly bent inwards, middle and hind tibiae crooked, large-sized species (about 19 mm. or more in length) ..... 4

3' : Front tibia evenly, very weakly bent inwards, middle and hind tibiae evenly, very slightly bent inwards, small-sized species (about 18 mm. or less in length) ..... 5

4 : Apical 1/3 of front tibia bent interiorly, punctures on pronotum coarser, elytral punctate-striae shallow, apical part of prosternal process depressed. Body length: 23.0-27.4 mm. (Amami-Oshima I.) ..... *oshimana* Miwa, 1935

4' : Apical 1/2 of front tibia bent interiorly, punctures on pronotum sparser, elytral punctate-striae deep, apical part of prosternal process not depressed. Body length: 19.5-25.0 mm. (Okinawa-Honto I.) ..... *okinawana* M. T. Chûjô, 1978

5 : Shining black, eye strongly prominent outwards, side margin of pronotum strongly warped outwards, propleuron nearly smooth, mesepisternum very densely, strongly punctate. Body length: 16.0 mm. (Iriomotejima I.) ..... *iriomotensis* M. T. Chûjô, 1979

5' : Indistinct umber or dull black, eye weakly prominent outwards, side margin of pronotum gently warped outwards, propleuron sparsely, strongly punctate,

mesepisternum very sparsely, weakly punctate. Body length: 17.0-17.8 mm.  
(Yakushima I.) ..... *exigua* sp. nov.

#### V. KEY TO THE RYUKYUAN SPECIES OF *Phaedis s. str.* BASED ON MALE

1 : Head and pronotum strongly punctate; elytra complicate-iridescent, nearly parallel-sided, striate-punctures comparatively large and deep, interstices gently convex; hind tibia simple. Body length: 10.6-12.5 mm. (Ishigakijima I. & Iriomotejima I.) ..... *marmoratus* M. T. Chūjō, 1978

1' : Head and pronotum weakly punctate; elytra with indistinct color pattern, sides gently dilated towards 2/3 from base, striate-punctures fine and shallow, interstices not convex; subapical part of hind tibia shallowly scooped on dorsal surface sublaterally ..... 2

2 : Elytra with metallic green tinge dominant, striate-punctures finer; hind corner of pronotum very feebly expanded outwards; scooped part of hind tibia much shallower. Body length: 10.5-12.0 mm. (Okinawa-Honto I.) ..... *iriei* sp. nov.

2' : Elytra with metallic purple tinge dominant, striate-punctures comparatively larger; hind corner of pronotum comparatively, strongly expanded outwards; scooped part of hind tibia much deeper. Body length: 10.0-11.8 mm. (Amami-Oshima I. & Tokunoshima I.) ..... *oshimensis* Nakane, 1979

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